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EXAMINER

TANG, KAREN C

ART UNIT	PAPER NUMBER
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2151

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/851,363

Applicant(s)

JU ET AL.

Examiner

Karen C. Tang

Art Unit

2151

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4-33, 35-71 and 74-85 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-33, 35-71 and 74-85 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

- A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/10/06 has been entered.
- Claims 1, 2, 4-33, 35-71, 74-85 are presented for further examination.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 2, and 4-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is a confusing language structure: Which element in Claim 1 coupled between the packet forward engine and the plurality of interface cards? Is it the router module that comprising a packet forwarding engine and an interface card concentrator module?

Also which module select the routes for the packets and forward the packets back to the plurality of interface cards via the interface card concentrator modules?

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

Art Unit: 2151

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 2, and 4-15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. “a router module separate from the plurality of removable interface cards comprising a packet forwarding engine and an interface card concentrator module coupled between the packet forwarding engine and the plurality of interface card” in Claim 1, cannot be supported by any embodiment such as embodiment 1-3, pages 3 and 4 nor figures 1-7. Where in the specification indicate that there are requirements for at least two different ones of the removable interface cards? Although the router module is separate from interface cards, but in the router module (interface card concentrator) is still communicating with the plurality of interface cards, therefore, they can be coupled with each other?

Claims 1, 2, and 4-15 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The specification fails to enable the one of ordinary skill in the art to produce the claim 1 invention, the specification teaches the first embodiment in figure 1, the second embodiment in figure 2, and the third embodiment in Fig 3, either embodiment fails to include routine module separate from the plurality of removable interface cards comprising a packet forwarding engine and an interface card concentrator module coupled between the packet forwarding engine and the plurality of interface cards, critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*,

Art Unit: 2151

527 F.2d 1229, 188 USPQ 356 (CCPA 1976). It is unclear the motivation to combine the embodiment 1 – 3 and figures 1-7 to produce claim 1, “routine module separate from the plurality of removable interface cards comprising a packet forwarding engine and an interface card concentrator module coupled between the packet forwarding engine and the plurality of interface cards”. Also, which module selects the routes for the packets and forward the packets back to the plurality of interface cards via the interface card concentrator modules?

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4-14, 16-30, 32, 33, 35-45, 47-61, 63-71, 74-79, and 81-83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilford et al hereinafter Wilford (US 6,687,247) in view of Merrel et al hereinafter Merrel (US 6,553,408).

1. Referring to Claims 1 and 71, Wilford disclosed a routing device comprising (abstract): a router module (210, refer to Fig 2) comprising a packet forwarding engine (145, Fig 1) and an interface card concentrator module (120, Fig 1) coupled between the packet forwarding engine and the plurality of interface (refer to Col 1, Lines 10-15); wherein the interface card concentrator module communicates packets from at least two different ones of the interface to the packet forwarding engine performs route lookups for the packets

Art Unit: 2151

received from the at least two different ones of the plurality of interface by the interface card concentrator module to select routes for the packets and forwards the packets back to the plurality of interface via the interface card concentrator module (refer to Col 5, Lines 1-35, Col 7, Lines 40-50, Col 8, Lines 1-30, Col 10, Lines 5-31), and wherein the packet forward engine and the interface card concentrator module are integrated into a single unit (Fig 1).

Wilford did not expressly disclose there is plurality of removable interface cards that receive information from the router modules:

Merrel disclosed there is plurality of removable interface cards (refer to Col 9, Lines 1-10) that receive information from the router modules (refer to Col 5, Lines 60-67).

At the time of the invention, it would have been obvious of ordinary skill in the art to indicate the usage of plurality of removable interface cards, which receive information from the router modules within the router.

The suggestion/motivation would have been that by having a removable interface cards, in the case when the interface cards fails, it is easier to replace interface card rather than remove the entire router out, which save cost and improve efficiency.

2. Referring to Claims 2, and 33, Wilford disclosed a midplane (physical medium interface, Col 2, Lines 50-67), which coupled coupled between the plurality of interface (refer to Col 1, Lines 10-15) and the router module, refer to Fig 1. (further comprising a midplane coupled between the plurality of interface from the router module.)

Wilford did not expressly disclose there is plurality of removable interface cards that receive information from the router modules:

Art Unit: 2151

Merrel disclosed there is plurality of removable interface cards (refer to Col 9, Lines 1-10) that receive information from the router modules (refer to Col 5, Lines 60-67).

At the time of the invention, it would have been obvious of ordinary skill in the art to indicate the usage of plurality of removable interface cards, which receive information from the router modules within the router.

The suggestion/motivation would have been that by having a removable interface cards, in the case when the interface cards fails, it is easier to replace interface card rather than remove the entire router out, which save cost and improve efficiency.

3. Referring to Claims 4, Wilford disclosed at least one memory management circuit (memory management circuit or Queue manager, refer to Col 1, Lines 30-67 and Fig 1) to provide data to the concentrator module (120, Fig 1) from the packets received from the plurality of interface cards (refer to 111 and 112, Fig 1).

4. Referring to Claims 35, and 74, Wilford disclosed at least one memory management circuit (memory management circuit or Queue manager, refer to Col 1, Lines 30-67 and Fig 1) to provide data to the concentrator module)

5. Referring to Claims 5, 36, and 75, Wilford disclosed in Fig 1, Col 1, Lines 40-67. a memory coupled to the concentrator module (120, Fig 1) and configured to store the data provided to the concentrator module (120, Fig 1).

Art Unit: 2151

6. Referring to Claims 6, Wilford disclosed wherein the concentrator module (refer to 130, Fig 1) assembles output bound packets from data stored in the memory (refer to 150, Fig 1) and forwards the outbound packets (output packet processing, refer to Fig 14) to the plurality of interface (refer to Fig 25).

Wilford did not expressly disclose there is plurality of removable interface cards that receive information from the router modules:

Merrel disclosed there is plurality of removable interface cards (refer to Col 9, Lines 1-10) that receive information from the router modules (refer to Col 5, Lines 60-67).

At the time of the invention, it would have been obvious of ordinary skill in the art to indicate the usage of plurality of removable interface cards, which receive information from the router modules within the router.

The suggestion/motivation would have been that by having a removable interface cards, in the case when the interface cards fails, it is easier to replace interface card rather than remove the entire router out, which save cost and improve efficiency.

7. Referring to Claims 20, 37, and 51, Wilford disclosed wherein the memory (Fig 1, Col 1, Lines 50-67 and outbound queue manager) is configured to store outbound data (Col 6, Lines 1-25).

8. Referring to Claims 7, Wilford disclosed in Fig 1, Col 5, Lines 45-55, where there is a buffer (memory), which buffered the modified packets (incoming packet). (wherein the concentrator module processes inbound packets (refer to 111, Fig 1) received from the plurality of interfaces

Art Unit: 2151

(refer to Col 1, Lines 10-15) to remove labels from the inbound packets, and stores data (buffer, Col 5, Lines 45-55) from the processed inbound packets (refer to Col 5, Lines 45-55) in the memory (refer to 150, Fig 1).)

9. Referring to Claim 38, Wilford disclosed in Fig 1, Col 5, Lines 45-55, where there is a buffer (memory), which buffered the modified packets (incoming packet). (wherein the memory (buffer, refer to Col 5, Lines 45-55 and Fig 1) is further configured to store inbound data (modified packets, refer to Col 5, Lines 45-55).)

10. Referring to Claims 8, 21, 39, and 52, Wilford disclosed wherein the memory comprises an SDRAM device (refer to Fig 2, Col 9, Lines 15-25).

11. Referring to Claims 9 Wilford disclosed wherein the memory management circuit (Fig 2, Col 1, Lines 15-30, Col 9, Lines 10-55) is further configured to provide a notification (sent the data information) to the packet forwarding engine (refer to 145, Fig 1) based on information extracted (enqueue, refer to Col 9, Lines 10-55) from an incoming data packet (incoming packets, refer to Fig 14).

12. Referring to Claims 22, 40, 53, 65, and 77, Wilford disclosed wherein the memory management circuit (lookup controller, refer to Fig 2, Col 1, Lines 15-30, Col 9, Lines 10-55) is further configured to provide a notification (then sent the data information) to based on information extracted (enqueue) from an incoming data packet.

13. Referring to Claims 10, 23, 41, 54, and 66, Wilford disclosed wherein the extracted information includes at least one of source address information, destination address information, source port information, and destination port information (refer to Col 1, Lines 15-30 and Col 7, Lines 50-61).

14. Referring to Claims 11, 24, 42, 55, and 67, Wilford disclosed wherein the packet forwarding module (refer to 145, Fig 1) is configured to select a route by referencing a forwarding table based on the extracted information (use packet modifier, refer to Col 7, Lines 23-25), and wherein the forwarding table stores (refer to Fig 9, Col 8, Lines 1-20, and Col 19, Lines 45-56 and Col 20, Lines 1-25) the route information for forwarding data packets (refer to Col 7, Lines 40-67 and Col 8, Lines 1-20) received from any of the plurality of interface cards.

Wilford did not expressly disclose there is plurality of removable interface cards that receive information from the router modules:

Merrel disclosed there is plurality of removable interface cards (refer to Col 9, Lines 1-10) that receive information from the router modules (refer to Col 5, Lines 60-67).

At the time of the invention, it would have been obvious of ordinary skill in the art to indicate the usage of plurality of removable interface cards, which receive information from the router modules within the router.

The suggestion/motivation would have been that by having a removable interface cards, in the case when the interface cards fails, it is easier to replace interface card rather than remove the entire router out, which save cost and improve efficiency.

15. Referring to Claim 77, Wilford disclosed wherein the packet forwarding module (refer to 145, Fig 1) is configured to select a route by referencing a forwarding table based on the extracted information (refer to forwarding table, refer to Fig 9, Col 8, Lines 1-20, and Col 19, Lines 45-56 and Col 20, Lines 1-25)

16. Referring to Claims 12, 26, 43, 57, and 79, Wilford disclosed a routing engine (routing engine, refer to Col 17, Lines 22-55) to store a routing table (external memory for forwarding table).

17. Referring to Claims 13, 27, 44, and 58, Wilford disclosed a memory (refer to Col 17, Lines 35-45) to store the forwarding table (refer to Col 18, Lines 1-30).)

18. Referring to Claims 14, 19, 28, 45, 50, 59 and 64, Wilford disclosed in Fig 1 and Fig 2, FIFO Controller, Col 7, Lines 15-50, (memory management circuits) to send (forward) the packet (incoming data packet) to the network physical interface (interface module) based on the header information (selected route). (wherein the memory management circuit (Fig 1 and Fig 2, FIFO Controller, Col 7, Lines 15-50) is configured to forward the incoming data packet to one of plurality of interfaces cards (network physical interface, Col 2, Lines 45-67) based on the selected route.

Art Unit: 2151

19. Referring to Claim 16, Wilford disclosed a plurality of interface cards to communicate data packets using a network (refer to Fig 1, Col 1, Lines 30-35), a router module (refer to Col 14, 15, 16, 17, 18 and 19) comprising a packet processing circuit (refer to Col 17, Lines 25-35), a memory management circuit (lookup controller, refer to Col 17, Lines 45-55), and a route lookup circuit integrated into a single module (refer to Col 17, Lines 34-55 and Fig 1) separate from the plurality of interface cards (113, and 114, and 210, refer to Fig 2) and a routing engine; and a midplane (120, Fig 1) coupled to the router module and to the plurality of interface cards.

wherein the midplane communicates to the router module packets received from the network by at least two different ones of the interface (refer to Col 5, Lines 1-35, Col 7, Lines 40-67, Col 8, Lines 1-30, and Col 10, Lines 5-31), and wherein the router module performs route lookups for the packets received from the at least two different ones of the interface to select routers for the packets and forward the packets back to the interface cards in accordance with route information associated with the network (Col 5, Lines 1-35, Col 6, Col 7, Lines 40-50, Col 8, Lines 1-30, and Col 10, Lines 5-30).

Wilford did not expressly disclose there is plurality of removable interface cards that receive information from the router modules:

Merrel disclosed there is plurality of removable interface cards (refer to Col 9, Lines 1-10) that receive information from the router modules (refer to Col 5, Lines 60-67).

At the time of the invention, it would have been obvious of ordinary skill in the art to indicate the usage of plurality of removable interface cards, which receive information from the router modules within the router.

Art Unit: 2151

The suggestion/motivation would have been that by having a removable interface cards, in the case when the interface cards fails, it is easier to replace interface card rather than remove the entire router out, which save cost and improve efficiency.

20. Referring to Claims 17 and 48, Wilford disclosed wherein the single module (control element, refer to Fig 1) comprises a single printed circuit card that interconnects the packet processing circuit, the memory management circuit, and the route lookup circuit (refer to Col 1, Lines 30-35, and Col 17, Lines 22-67).

21. Referring to Claims 18 and 49, Wilford disclosed a memory (160, refer to Fig 1) coupled to the packet processing circuit and configured to store incoming data (150, refer to Fig 1).

22. Referring to Claims 25, 56, and 68, Wilford disclosed refer to Col 20, Lines 9-20, that LookUp Engine (lookup circuit) designed (configure) forwarding table (routing table) to provides the index (longest prefix) to select the output encapsulation (select the route based on the extracted information). (The routing device of claim 24, wherein the route lookup circuit is configured to selected the route by performing a longest prefix match based on the extracted information.)

23. Referring to Claims 29, 60, and 69, Wilford disclosed wherein the packet processing circuit is configured to remove an L2 header from an incoming data packet (refer to Col 17, Lines 4-10, 36-45).

24. Referring to Claims 30, 61, and 70, Wilford disclosed wherein the packet processing circuit (refer to Col 27, lines 15-35) is configured to build an L2 header for an outbound data packet.

25. Referring to Claims 32 and 82, Wilford disclosed a plurality of routing devices coupled to the crossbar arrangement (Fig 2, and Col 1, Lines 30-50), at least one routing device comprising: a plurality of interface (refer to Col 1, Lines 10-15) to communicate data packets using a network (refer to Fig 1, Col 1, Lines 30-35 and refer to Col 1, Lines 5-10); and a router module (refer to Col 14, 15, 16, 17, 18 and 19) wherein the router module performs route lookups for a first set of the data packets received from the network by a first one of the interface (multicast data, refer to Col 10, Lines 5-31) and for a second set of the data packets received from the network by a second one of the interface (unicast, refer to Col 10, Lines 5-31) to select routes for the data packets and to forward the data packets between the interface cards.

Wherein the router module comprises a system control module that performs the route lookups and at least one concentrator module that receives the data packets from at least the first one and the second one of the interface (refer to Col 5, Lines 1-35, Col 7, Lines 40-50, Col 8, Lines 1-30, and Col 10, Lines 5-31), and

Wherein the system control module and the concentrator module are intergrated into a single unit. (refer to Fig 1)

Wilford did not expressly disclose there is plurality of removable interface cards that receive information from the router modules:

Art Unit: 2151

Merrel disclosed there is plurality of removable interface cards (refer to Col 9, Lines 1-10) that receive information from the router modules (refer to Col 5, Lines 60-67).

At the time of the invention, it would have been obvious of ordinary skill in the art to indicate the usage of plurality of removable interface cards, which receive information from the router modules within the router.

The suggestion/motivation would have been that by having a removable interface cards, in the case when the interface cards fails, it is easier to replace rather than remove the entire router out, which save cost and improve efficiency.

26. Referring to Claims 47 and 83, Wilford disclosed a crossbar arrangement (refer to Fig 1); a plurality of routing devices coupled to the crossbar arrangement (Fig 2, and Col 1, Lines 30-50.), at least one routing device comprising (refer to Fig 1, Col 1, Lines 30-35): a plurality of interface to communicate data packets using a network (refer to Fig 1, Col 1, Lines 1-35 and refer to Col 1, Lines 5-10), a router module (refer to Col 14, 15, 16, 17, 18 and 19) comprising a packet processing circuit (refer to Col 17, Lines 25-35), a memory management circuit (lookup controller, refer to Col 17, Lines 45-55), and a route lookup circuit integrated into a single module (refer to Col 17, Lines 34-55 and Fig 1) separate from the plurality of interface cards (113 and 114, refer to Fig 2) and a routing engine (lookup engine, refer to Col 17, Lines 22-55), and a midplane (120, Fig 1) coupled to the router module and to the plurality of interface cards (refer to Fig 1, Col 1, Lines 30-40).

Wilford did not expressly disclose there is plurality of removable interface cards that receive information from the router modules:

Art Unit: 2151

Merrel disclosed there is plurality of removable interface cards (refer to Col 9, Lines 1-10) that receive information from the router modules (refer to Col 5, Lines 60-67).

At the time of the invention, it would have been obvious of ordinary skill in the art to indicate the usage of plurality of removable interface cards, which receive information from the router modules within the router.

The suggestion/motivation would have been that by having a removable interface cards, in the case when the interface cards fails, it is easier to replace rather than remove the entire router out, which save cost and improve efficiency.

27. Referring to Claim 61, Wilford disclosed wherein the packet processing circuit is configured to build an L2 header and rewrite an L3 header for an outbound data packet (refer to Col 27, Lines 55-67 and Col 5, Lines 23-37, Fig 1).)

28. Referring to Claim 63. Wilford disclosed an interface concentrator (130, refer to Fig 1) that provides electrical interfaces (refer to Fig 25) to receive incoming packets from a plurality of interface (refer to Col 1, Lines 10-15), a packet processing circuit (refer to Col 17, Lines 25-35), a memory management circuit (lookup controller, refer to Col 17, Lines 45-55), and a route lookup circuit to select routes for the incoming packets received from the plurality of interface.) Wilford did not expressly disclose there is plurality of removable interface cards that receive information from the router modules:

Merrel disclosed there is plurality of removable interface cards (refer to Col 9, Lines 1-10) that receive information from the router modules (refer to Col 5, Lines 60-67).

Art Unit: 2151

At the time of the invention, it would have been obvious of ordinary skill in the art to indicate the usage of plurality of removable interface cards, which receive information from the router modules within the router.

The suggestion/motivation would have been that by having a removable interface cards, in the case when the interface cards fails, it is easier to replace rather than remove the entire router out, which save cost and improve efficiency.

29. Referring to Claim 76, Wilford disclosed configuring the memory (Fig 1 and 6 and Col 9, Lines 34-42) to store data associated with at least one of an outbound packet and an inbound packet (refer to Col 9, Lines 15-23, and Col 11, Lines 4-15).

30. Referring to Claim 81, Wilford disclosed providing a plurality of interface cards to communicate data packets using a network; providing a routing module separate from the plurality of interface cards (refer to Col 17, Lines 34-55 and Fig 1) and coupling a router module (refer to Col 14, 15, 16, 17, 18 and 19) comprising a packet processing circuit (refer to Col 17, Lines 25-35), a memory management circuit (lookup controller, refer to Col 17, Lines 45-55), and a route lookup circuit integrated into a single module to the plurality of interface cards via a midplane (120, Fig 1).

31. Referring to Claim 82, Wilford disclosed a providing a crossbar arrangement (Fig 1); and coupling a plurality of routing devices to the crossbar arrangement (Fig 2, and Col 1, Lines 30-50), at least one routing device comprising: a plurality of interface modules to communicate data

Art Unit: 2151

packets using a network (Refer to Fig 1, Col 1, Lines 1-40); a route module (refer to Col 14, 15, 16, 17, 18 and 19) separate from the plurality of interface cards to process the data packets and to forward the data packets between the interface modules.)

32. Referring to Claim 83, Wilford disclosed providing a crossbar arrangement (refer to Fig 1); and coupling a plurality of routing devices to the crossbar arrangement (Fig 2, and Col 1, Lines 30-50.), at least one routing device comprising: a plurality of interface (refer to Fig 1, Col 1, Lines 1-35) to communicate data packets using a network (refer to Col 1, Lines 5-10), a router module (refer to Col 14, 15, 16, 17, 18 and 19) comprising a packet processing circuit (refer to Col 17, Lines 25-35), a memory management circuit (lookup controller, refer to Col 17, Lines 45-55), and a route lookup circuit integrated into a single module separate from the plurality of interface cards (refer to Col 17, Lines 34-55 and Fig 1), and a midplane (120, refer to Fig 1) coupled to the router module and to the plurality of interface cards (refer to Fig 1, Col 1, Lines 30-40).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 15, 31, 46, 62 and 80, 84, 85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilford et al hereinafter Wilford (US 6,687,247) in view of Merrel et al

Art Unit: 2151

hereinafter Merrel (US 6,553,408) in further view of Zadikian et al hereinafter Zadikian (US 6,724,757).

33. Referring to Claims 15, 31, 46, 62 and 80, Wilford disclosed a router module to process the data packet and to forward the data packet between the interface modules, refer to Fig 1, Col 1, Lines 1-40.

Wilford and Merrel did not expressly disclose a redundant router in response to the malfunction of the router module.

Zadikian disclosed a redundant router, refer to Col 8, Lines 10-25.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Wilford, Merrel and Zadikian's inventions.

The suggestion/motivation for implemented a redundant part is that Wilford and Merrel disclosed that each routing device/system consists a set of linecards, and each linecard consists of identical parts. Thus it would have been obvious to implement another identical router in the event of system failure.

The benefit would have been that when failure of the router occur, there is always a backup and also can improve the switching speed and minimizes the impact of such redundancy on other connections.

34. Referring to Claim 84, Wilford disclosed a crossbar arrangement in Fig 1, a plurality of routing interfaces connected to the crossbar arrangement, in Fig 2, and Col 1, Lines 30-50.

Wilford disclosed a routing communication device (abstract), which consists plurality of

Art Unit: 2151

interfaces in the communication system, refer to Fig 1, Col 1, Lines 1-40. Wilford disclosed a plurality of interfaces refer to Fig 1, Col 1, Lines 1-35, for the communication data packets using network, refer to Col 1, Lines 5-10, Refer to Fig 1, Col 1, Lines 1-40, Wilford disclosed information is pass from the one of the set input interfaces and forward on to one of a set of output interfaces (plurality of interfaces).

Wilford disclosed that the switch fabric (switch arrangement), in the outbound linecard, refer to Col 6, Lines 6-23. Wilford also disclosed linecards (plurality of routing device) are interface with communication devices. He also disclosed and a router module to process the data packets and to forward the data packets received from any of the interface modules in accordance with route information associated with the network (Refer to Fig 1, Col 1, Lines 1-40).

Wilford did not expressly disclose there is plurality of removable interface cards.

Merrel disclosed there is plurality of removable interface cards (refer to Col 9, Lines 1-10).

At the time of the invention, it would have been obvious of ordinary skill in the art to indicate the usage of plurality of removable interface cards, which receive information from the router modules within the router.

The suggestion/motivation would have been that by having a removable interface cards, in the case when the interface cards fails, it is easier to replace rather than remove the entire router out, which save cost and improve efficiency.

Wilford and Merrel did not expressly disclose a switch device configured to switch control from a first routing device to a second routing device.

Zadikian disclosed in Col 10, Lines 10-50, he disclosed a switch element and how a linecards (plurality of routing devices) are connected to two separate copies of the main matrix, and once

Art Unit: 2151

the error is detected, the switch device would sent the signal to the backup linecard (routing device).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Wilford, Merreland Zadikian's inventions.

The suggestion/motivation for implemented a redundant part is that Wilford disclosed that each routing device/system consists a set of linecards (routing devices), and each linecard consists of identical parts (identical linecards and which one can be a backup copies). He also indicate there is a switch fabric device (switch element), refer to Fig 1 and 2. It would only been obvious for one ordinary skill in the art to implement a switch device which switch from the original router device to the backup router device once the error is detected.

The benefit would have been that when failure of the router occur, there is always a backup and can avoid the traffic congestion.

(A routing arrangement comprising: a plurality of routing devices coupled in a the crossbar arrangement, at least one routing device comprising: a plurality of interface modules to communicate data packets using a network; and a router module to process the data packets and to forward the data packets received from any of the interface modules in accordance with route information associated with the network; and a switch arrangement coupled to the plurality of routing devices and configured to switch control from a first routing device to a second routing device.)

35. Referring to Claim 85, Wilford disclosed a plurality of interfaces cards, refer to Fig 1, Col 1, Lines 30-35, for the communication data packets using network, refer to Col 1, Lines 5-10, a

Art Unit: 2151

routing devices comprises packet processing circuit (lookup engine, refer to Col 17, Lines 24-35), memory management circuit (lookup controller, refer to Col 7, Lines 15-50), and all the component are within the Lookup Unit (refer to Col 45-55). A midplane (120, refer to Fig 1) coupled to the router device and to the plurality of interfaces, refer to Fig 1, Col 1, Lines 1-40.

Wilford disclosed a crossbar arrangement in Fig 1, a plurality of routing interfaces connected to the crossbar arrangement, in Fig 2, and Col 1, Lines 30-50. Wilford disclosed that the switch fabric (switch arrangement), in the outbound linecard, refer to Col 6, Lines 6-23. He also disclosed linecards (plurality of routing device) are interface with communication devices. Wilford also disclosed route lookup circuit integrated into a single module separate from the plurality of interface (refer to 113, 210, and 114, refer to Fig 1).

Wilford did not expressly disclose there is plurality of removable interface cards.

Merrel disclosed there is plurality of removable interface cards (refer to Col 9, Lines 1-10).

At the time of the invention, it would have been obvious of ordinary skill in the art to indicate the usage of plurality of removable interface cards, which receive information from the router modules within the router.

The suggestion/motivation would have been that by having a removable interface cards, in the case when the interface cards fails, it is easier to replace interface card rather than remove the entire router out, which save cost and improve efficiency.

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Art Unit: 2151

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Wilford and Merrel did not expressly disclose a switch device configured to switch control from a first routing device to a second routing device.

Zadikian disclosed in Col 10, Lines 10-50, he disclosed a switch element and how a linecards (plurality of routing devices) are connected to two separate copies of the main matrix, and once the error is detected, the switch device would sent the signal to the backup linecard (routing device).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Wilford, Merrel and Zadikian's inventions.

The suggestion/motivation for implemented a redundant part is that Wilford disclosed that each routing device/system consists a set of linecards (routing devices), and each linecard consists of identical parts (identical linecards and which one can be a backup copies). He also indicate there is a switch fabric device (switch element), refer to Fig 1 and 2. It would only been obvious for one ordinary skill in the art to implement a switch device which switch from the original router device to the backup router device once the error is detected.

The benefit would have been that when failure of the router occur, there is always a backup and can avoid the traffic congestion.

(A routing arrangement comprising: a plurality of routing devices coupled in a crossbar arrangement, at least one routing device comprising: a plurality of interface to communicate data packets using a network, a router module comprising a packet processing circuit, a memory management circuit, and a route lookup circuit integrated into a single module separate from the plurality of interface cards and a routing engine, and a midplane (120, refer to Fig 1) coupled to the router module and to the plurality of interface cards; and a switch arrangement coupled to the plurality of routing devices and configured to switch control from a first routing device to a second routing device.)

Response to Arguments

Applicant's arguments with respect to claims 1, 2, 4-33, 35-71, 74-85 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 2151

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen C. Tang whose telephone number is (571)272-3116. The examiner can normally be reached on M-F 7 - 3.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zarni Maung can be reached on (571)272-3939. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Karen Tang

03/02/06

Khanh Bink
Primary Examiner